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Sociological individualism

Peter Hedström & Petri Ylikoski

Methodological individualism often is seen as an import from the outside; something which threatens to colonize the discipline of sociology and to make it into something that it was not intended to be or at least to introduce some alien elements into the discipline. Often some form of "economic imperialism" is seen as the main culprit, but although Gary Becker (1976) and his "unflinching" economic approach to human behavior may appear simplistic and a bit offensive to many of us, it is important to be aware of that methodological individualism was not an invention of economists. To the contrary, it is an important part of our own intellectual heritage. This is perhaps most clearly demonstrated in the work of Max Weber and in his insistence that one should never accept aggregate associations as explanatory until they have been broken down into intelligible patterns of individual action (see Udéhn 2001).

Methodological individualism does not have any single accepted meaning**.** Simply uttering the words "methodological individualism" hence does not convey much in terms of meaning. Therefore, let us start with clarifying what we mean with the term. We start with briefly alluding to some positions to which it often but incorrectly is associated and then we provide what we believe to be an appropriate definition of the term.

First of all, and as already Schumpeter emphasized a long time ago, to be a *methodological* individualist implies no commitment whatsoever to any other form of individualism, political or otherwise. It is a methodological position, pure and simple; a view of what acceptable explanations in the social sciences should be all about. Empirically Schumpeter's point was perhaps most clearly demonstrated by the so-called analytical Marxism that flourished in the 1980s (e.g., Roemer 1986). Some of the analytical Marxists sought to reconstruct Marxist theory on the basis of the principle of methodological individualism.

Furthermore, methodological individualism implies no commitment to any specific type of intentional state that is assumed to motivate individuals to act as they do. In its barest form, as represented by Homans' form of behavioristic methodological individualism (e.g., Homans 1987), it may not make any reference to mental or intentional states whatsoever. Most methodological individualists are not behaviorists, however; they focus on *actions*, i.e., behavior guided by intentions.

Since methodological individualism so often is associated with "economic imperialism" and rational-choice theory, it is important to emphasize, once again, that the doctrine implies no commitment to any specific type of intentional state, and it does not deny the obvious fact that intentional states have important social dimensions. Hence methodological individualism is not rational-choice theory in disguise, and it does not imply a view of the social world as being composed of atomistic individuals. (For a discussion of the difference between atomism and individualism, see Pettit 1993.)

Our preferred definition of the term is a slightly elaborated version of a definition once proposed by Jon Elster (1983):

> Methodological individualism is a doctrine according to which all social phenomena, their structure and change, are in principle explicable in terms of individuals, their properties, actions, and relations to one another.

Methodological individualism is not only a positive statement about what in principle *can* be done, however; it also is a normative *methodological* statement about what *ought* to be done whenever possible, and we will return to this point later.

Whether this type of doctrine should be labeled methodological individualism, sociological individualism, or structural individualism is of lesser importance to us. What is important is what it represents; and it represents a quest for causal depth in explanations. This causal depth is arrived at by making explicit the micro foundations, or the social cogs and wheels through which the macro outcomes to be explained are brought about. In this view, *actions*[1] are important because nearly everything that interests us as sociologists are the intended or unintended outcomes of individuals'

[1] From now on, unless otherwise noted, when referring to *action* we refer to intentionally motivated as well as unintentional behavior, i.e., as *action* and/or *behavior* as these terms were defined above.

actions, and *relations* are important because relations to others are central when it comes to explaining the content of individuals' intentional states as well as their action opportunities, and both of these are important for explaining why individuals do what they do. In addition, relations are central for explaining why, acting as they do, individuals bring about the social outcomes they do.

That relations are important for explaining outcomes does not mean that they are independent of individuals and their actions, however. As emphasized above, *in principle*, all relational structures can be understood in terms of intended or unintended outcomes of individuals' actions and intentional attitudes. This form of methodological individualism is perfectly compatible with an explanatory strategy that takes certain "structures" as exogenously given.

We are not arguing for hypothetical "rock-bottom explanations" (Watkins 1957) that start from an idealized state of nature in which no social relations are assumed to exist or to matter. Such thought experiments can be challenging and entertaining and they can be of use in normatively-oriented theory, but we do not see them as serious contenders for explanations of what is observed here and now. Many essential components of sociological explanations -- such as norms and networks – often are the results of long and intricate social processes. If we were to aim for "rock bottom" explanations, these sorts of components must either be ignored, which to us seem unacceptable; or they must be endogenized, which given the current state of social theory, in many cases is impossible. For this reason, the realism and the precision of the proposed explanation is greatly improved if we take certain macro-level properties as given and incorporate them into the explanation.

It is important to recognize that in contrast to some traditional forms of individualism, the sociological individualism we are advocating does not attempt to eliminate macro social phenomena from ontology or to reduce them to individual properties. In our view macro social phenomena are of central explanatory concern in sociology. The crucial issue is how to explain them. In order to get a better grasp of this, we need a clear idea of what kinds of things they are.

Macro-social properties

What are macro properties in the case of sociology? In our view, macro properties are properties of a collectivity or a set of micro level entities that are not definable for a single micro-level entity. In other words, macro properties are attributes of things like societies, communities, organizations and groups that are not meaningfully attributed to individuals. Quite often sociologists talk about macro properties in terms of structures, for example, when they talk about age structure or occupational structure. However, macro properties do not constitute a unified kind. For this reason, it is meaningful to characterize them with a sample of examples rather than a general definition (Hedström 2005).

1) When sociologists are studying changes in racial prejudices over time, comparing communities with respect to their level of conformism, or trying to characterize organizational cultures, they are basically interested in *typical behaviors, beliefs and attitudes* of the members of these communities.
2) When sociologists are studying ethnical segregation of cities, comparing societies in terms of inequality, or describing the social stratification of a society, they are addressing *distributions of individuals and their various attributes*.
3) When sociologists are studying the spread of information within an organization, comparing groups with respect to their level of network clustering, or characterizing brokering opportunities of an individual occupying a structural whole, they are focusing on *topologies of networks*.

This list of examples is not exhaustive, but it shows that macro social properties are a central descriptive and explanatory concern for sociology. In all these cases, the object of explanation is a social phenomenon that is an attribute of a collectivity of actors. Influential sociological analyses that exemplify this focus on social phenomena include Durkheim's (1897) analysis of suicide rates, Weber's (1904) analysis of why modern capitalism emerged in the Western world, and Coleman, Katz, and Menzel's (1957) analysis of the diffusion of a new drug. In all of these analyses the entities to be explained were social or macro-level phenomena characterizing the properties of a collectivity or a group of individuals and these properties are not definable for a single individual.

One way to characterize the relation between micro and macro is to employ the

philosophical concept of supervenience (Horgan 1993, Kim 1993; Hedström & Bearman 2009). Briefly, a macro property, M, is said to supervene on a set of micro level properties, P, if identity in P necessarily implies identity in M (see Figure 1). If macro is supervenient upon the micro it means that, if two collectivities or societies are identical to one another in terms of their micro-level properties, then their macro level properties also will be identical. It also implies that two collectivities that differ in their macro level properties will necessarily differ in their micro level properties as well. As the slogan goes, there is no difference in macro properties without a difference in micro properties. However, the relation of supervenience does *not* imply that two collectivities with identical macro level properties will necessarily have identical micro level properties because identical macro-level properties can be ”realized” in different ways. Let us take two simple examples to illustrate the point of multiple realizability. First, the divorce rate of a society (a macro-level property) can be exactly the same at two points in time although it is not the same individuals who are married and divorced at the two points in time. Second, a social network describing the links that exist between a group of individuals can have identical macro-level properties (density, centrality, degree distribution, etc) at different points in time although the micro-level details of the network, who is linked to whom, may have changed considerably.

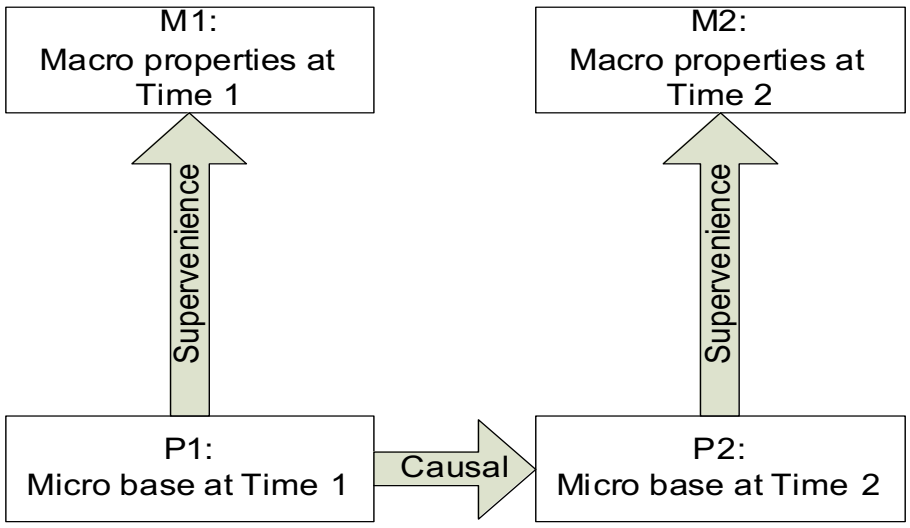

Figure 1. Micro-macro relations as supervenience relations.

It is important to recognize that the relationship between a macro property and its micro level realization should not be viewed as a causal relation. Rather, the relation is that of constitution: the set of micro level facts constitute the macro level fact. The difference between constitution and causation is ontological: whereas cause and effect are distinct parts of a temporal process, there is no temporal difference between the set of macro properties and the set of micro properties that constitute it. Similarly, whereas cause and effect can be thought of as ”distinct existences” as David Hume required, this idea does not make sense in the case of constitution. To have certain micro properties *is* to have certain macro properties. For example, the social cohesiveness of a group is not caused by group members having certain attitudes and relations toward each other (at that same time). Rather, the cohesiveness consists of them having those attitudes and relations.

The notion of supervenience has been used much in philosophy of mind to characterize the relation between the mental and the physical (Horgan 1993, Kim 1993). Although some authors (for example, Sawyer 2005) have found this analogy inspiring, we would take a more cautious attitude towards importing arguments from philosophy of mind. There the central challenge is to see how the rich conceptual apparatus employing mental concepts can be accommodated with the idea of a physical reality that is devoid of any intrinsic intentionality. This is quite different from the situation in the social sciences. There is no comprehensive conceptual apparatus to explain and describe social phenomena in terms of supra-individual properties. What we have is a mixed lot of different kinds of macro properties and some relatively local patterns of empirical regularities between them. Second, ‘the individual level’ cannot be constructed analogous to the physical. The supervenience base includes things that are not attributes of individuals, for example technological artefacts. It is also highly controversial which properties are properly ‘individual’. For example, many of the relational properties that are considered by structural individualists to be micro properties, are regarded by anti-individualists as non-individual properties.

From our point of view, the layered picture of the social world inspired by philosophy of mind has very little to give for the social sciences. Even if it were possible to

characterize the unique contrasts between individual and social levels, this would have very little methodological relevance. In contrast, the micro-macro distinction is important in all sciences. We suggest that the notion of supervenience is used only in the modest role of characterizing particular micro and macro relations. The difference between the two is a difference of scale that is analogical to part-whole relationship. Whereas the contrast between 'individual' and 'social' levels is categorical, micro-macro relations constitute a continuum of contrasting scales. Whether an attribute is a macro or micro property depends on what it is contrasted with. A friendship relationship is a macro property from the psychological point of view, but a micro property when considered from the point of view of the social networks within a community.

At the core of our version of sociological individualism is the idea of mechanistic explanation. In this view, an explanation of an observed association between macro-level properties requires explication of mechanisms that produce the regularity. The logic of mechanistic explanation leads us to look at the micro foundations of the macro pattern. We should first look at what kinds of micro level processes, properties, and relations constitute the relevant macro properties. Whatever properties the social whole (group, organization, community) has, we should always ask, what makes the whole have those properties? In contrast to the emergentist views (e.g. Sawyer 2005), that tend to regard macro properties as unexplainable novelties, our mechanistic view regards it as a tractable research problem. And whatever macro level causal properties the whole has, they are causal properties of the micro level constellations.

The next step in the search for a mechanistic explanation of an observed association between macro-level properties is to understand the causal relations between the micro constellations that realize the macro properties of interest. The idea is to examine how the changes in the large scale (the macro) are brought about by local level interactions (the micro). Only by looking under the hood of the car, we can understand what makes it move move. Similarly only by looking at the level of interacting agents, can we understand what drives the macro level changes (or stability) being observed. Notice that in these accounts the beliefs the individuals have about macro properties might have a crucial role. For example, an individual's decision of whether or not to join a social movement can be influenced by the individual's beliefs about the proportion of other individuals in the relevant reference

group who already have joined the movement (e.g., Granovetter 1978). It is not part of our individualism to reduce the contents of mental representations of individuals to some privileged 'individualist' language.

This logic of mechanistic explanation can be illustrated considering Weber's (partial) explanation of the emergence of modern capitalism in Western Europe. Weber starts with an idea that was a commonplace in late 19th century Europe: there is a close connection between Protestantism, entrepreneurism, and the rise of capitalism. In order to give flesh to this vague explanatory suggestion he asked what kind of changes the emergence of Protestantism brought about in the beliefs, desires and communal practices of individual agents. This is basically an answer to our constitutive question: it tells us what constitutes 'the protestant ethic'. Then Weber moves to the causal question: how these changed life practices of individuals brought about changes in economic activities and institutions that then facilitated the formation of modern capitalism. As the endless debates about "the Weber thesis" illustrate, many details of this causal story are missing and it is still open issue how important these factors actually were. Whatever is the final verdict on these issues, from our point of view it is notable that Weber's work illustrates the mechanistic explanatory strategy we are advocating.

As noted above, the idea of mechanistic explanation does not imply that we have to always regress to some specific and privileged 'individual level' in our explanations. Rather, it demands that we make sense of the macro pattern in terms of some well-understood micro mechanisms. The properties and processes included in these micro mechanisms can then themselves be turned into objects of mechanistic explanations. Just like in other sciences, mechanistic explanation in social sciences is based on chains of mechanistic levels, not some privileged level of explanation.

From an explanatory point of view, explicating the links between micro and macro and how they evolve over time, are fundamental because macro level regularities say so little about why we observe what we observe. The knowledge of underlying causal mechanisms improves our understanding of a social phenomenon in a number of a different ways (Ylikoski 2010). First, it helps us to understand *why* the macro level regularity holds (or why there are no macro level regularities) and what are its background conditions. Second, it connects the causal claim with other pieces causal

knowledge and thus integrates our knowledge of the phenomenon. Third, it helps us to understand under which conditions the macro level generalization breaks apart.

Computer simulation and sociological explanations

Until very recently we did not have the analytical tools needed for analyzing the dynamics of complex systems that large groups of interacting individuals represent. But powerful computers and simulation software has changed the picture. So-called agent-based computer simulation has a promise of transforming important parts of sociological theory because they allow for rigorous theoretical analyses of large complex systems (see Macy and Willer 2002; Epstein 2006). The basic idea behind such analyses is to identify the core mechanisms believed to be at work, assemble them into a simulation model, and run the simulation to establish the macro-level outcomes expected given the micro-level assumptions of the model.

The most famous example of agent-based simulation in the social sciences is Thomas Schelling's (1971) segregation model. As it has been used as an example so many times before, we will illustrate the principles involved in these types of analyses with a study of self-enforcing norms by Damon Centola, Robb Willer and Michael Macy (2005, see also Willer, Kuwabara and Macy 2009). They use agent-based modeling to examine the population level implications of false enforcement as a signal of sincerity. In the model, a very small fraction of true believers can spark a cascade of conformity and false enforcement that quickly engulfs a vulnerable population. This does not happen because people are converted to new beliefs, but because they feel a need to affirm the sincerity of their false conformity. Let us start by taking a look at the ideas of self-enforcing norms and illusions of sincerity, and then see how agent-based simulation can be used to understand these phenomena.

It is easy to see why people would pressure others to behave the way they want them to behave. However, the tricky question is why would people publicly enforce a norm that they secretly wish would go away? Centola *et al.* suggest that in these cases the people who really want to enforce the norm, can trigger enforcement cascades which result in others enforcing norms that they do not privately support. For true believers, it is not sufficient that others do the right thing; they must do it for the right reason.

This creates a problem for those who are not committed to the norm but want to avoid sanctions from the true believers: they must somehow prove their sincerity in order to avoid being exposed as posers. One way to demonstrate sincerity is to sanction those who voice opposition to the norm. The enforcement of the norm serves as a signal of a genuine conviction.

The above reasoning shows that cascades of self-enforcing norms are possible, but it tells us very little about the circumstances under which they are likely to emerge. Can self-enforcing norms emerge in a reluctant population without top-down institutional repression or without special circumstances that jump-start the process? Can the process be entirely self-organizing? How many true believers are needed and how weak-willed must the disbelievers be for a cascade to start unfolding? Verbal theorizing cannot answer these questions and it is very difficult to study these kinds of processes purely empirically. Centola *et. al.* show how agent-based computer simulations can be used for getting leverage on dynamics that would otherwise be intractable.

In the simulations, the population consists of agents who differ in their beliefs and convictions. A small group of true believers is assumed to have such strong convictions that they always comply with the norm. When dissatisfied with the level of compliance by others, they may enforce the norm. The remainder of the population consists of disbelievers who privately oppose the norm, but with less conviction compared to that of the true believers. The disbelievers may deviate from the norm or even pressure others to deviate as well. However, the disbelievers can also be pressured to support the norm and even to enforce it. At every iteration of the simulation, each agent observes how many of its neighbors comply with the norm and how many deviate. They also observe how many neighbors are enforcing the compliance and how many are enforcing deviations from the norm. Based on this information, the agents decide whether they comply or deviate and whether they enforce others to behave similarly in the next round.

In their simulations Centola *et. al.* manipulated three kinds of conditions: 1) the access to information about the behavior of other agents; 2) the frequency distribution and clustering of true believers; and 3) the network topology. The results of these simulations were surprising: the cascades are much easier to achieve than expected. A

small group of true believers can bring about a cascade in population where the neighborhoods are local, but not in unembedded (fully connected) populations. Also the clustering of the true believers turned out to be relevant: a very small cluster of believers can trigger the cascade, while a great number of randomly distributed believers cannot achieve this. Finally, when a small number of random ties reduced the overlap between local neighborhoods, the cascades were prevented. On the basis of these observations Centola *et. al.* concluded that unpopular norms thrive on local misrepresentations of the underlying population distribution, that is, the cascades are outcomes of a sampling problem. However, the most interesting result was that disbelievers are crucial for the emergence of cascades. Without them the cascades do not get started and if they start to convert to true believers, the following of the norm might paradoxically collapse.

The paper by Centola *et. al.* is an excellent example both of the use of agent-based simulation in sociological inquiry and of the kind of sociological individualism we are advocating. It shows how a well-designed simulation can expand the reach of sociological theory and raise new and well-defined problems for empirical research. It also shows how looking at the mechanisms by which macro level facts are generated and realized enhances the causal depth of sociological explanations. The models by Centola *et al.* show how simple and predictable local interactions generate familiar but puzzling macro patterns, such as wide-spread enforcement of unpopular norms.

It is important to understand that simulations like these are not intended to be representations of any particular empirical phenomena. Their purpose is theoretical and they can be regarded as dynamic thought experiments. Such thought experiments are not mere fairy tales when they are used as a part of a program of systematic theoretical research that explores a series of what if questions. Much of the development of mechanism-based knowledge in the science consists of developing how-possibly explanation schemes. These schemes are not intended to directly explain any particular empirical facts, but to provide general understanding of how things could work.

Social processes are usually so complex that outcomes become virtually impossible to explain without the aid of some formal analytical tools. Without such tools it is difficult to recognize, and even more difficult to convince others, that the large-scale

phenomena that one seeks to explain may be the result of a particular type of mechanism. Simulation allows us to see how the phenomenon to be explained could have been generated and how changes in action logics or relational structures are likely to change the macro outcome. Simulations increase our explanatory understanding (Ylikoski and Kuorikoski 2010), both by making it possible to track the dependencies and by making our theoretical inferences more reliable. Joshua Epstein (2006, p. 53) has formulated this insight about generative explanation as a slogan: 'If you didn't grow it, you didn't explain it.'

The process of building a formal model forces the theorist to make explicit her reasoning and makes it possible to see what follows from given assumptions. Similarly, the model-building allows for the same type of piecemeal theoretical development that has been useful in other sciences. Sociologists should regard the method of isolation and abstraction (Mäki 1992) as an indispensable part of theory-development: empirical reality is complex and it is futile to try to capture it in all its complexity. However, it should be kept in mind that simplicity and elegance are only instrumental values and should not override the aim of accurately describing the real causal mechanisms producing the observable phenomena. Rather than seeking excessively precise fictions, social scientists should aim for theoretical assumptions known to be at least roughly correct. As Tukey (1962: 15-16) once put it, 'far better an approximate solution to the *right* question than …an exact answer to the *wrong* question'.

Conclusions

In this paper we have been advocating a form of sociological individualism that is substantially different from many traditional forms of methodological individualism, but still has a methodological bite. It emphasizes the importance of asking causal questions and thinking in terms of mechanisms. The mechanistic approach to explanation does not attempt to eliminate macro social factors from sociological explanations, nor does it attempt to reduce them. It rather bridges macro facts to micro facts by means of mechanistic explication of causal processes.

The central message of this approach is the following: in order to understand macro and micro dynamics, we must study the collectivity as a whole, but we must *not* study

it *as* a collective entity. Only by taking into account the individual entities, their properties, relations, and activities, can we understand the collective dynamics. Without tools like agent-based simulations it would be impossible to predict and explain the dynamics. Since tools like these are becoming increasingly more available and easy to use, the future of sociology as a rigorous scientific discipline looks to us brighter than it has ever done before.

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